C. CORRECTIVE ACTION PLAN AND WELL DATA

The AOR, as discussed in Attachment A, is set at a minimum fixed radius of 2-miles for non-hazardous Class 1 wells. Well data available from public records within the AOR are tabulated in Table A-1 (non-freshwater) and Table A-2 (freshwater). Twenty-three (23) non-freshwater wells and eight freshwater wells were identified within the AOR. Surrounding wells, with the exception of shallow monitoring wells and borings, are show on the map provided in Attachment B.

The available records for the two wells within the AOR that penetrate the top of the confining zone, Utica-Trenton, which is projected to occur at a depth of approximately 2,060 feet bgs, were reviewed (Table C-1), but do not penetrate the injection zone (Figure F-5). Well API # 21163004199000 (W.E. Ellis) is listed as dry and abandoned. The drillers log was the only record available for review for this well (Appendix B). Since this well was drilled in 1927, records are limited. MDEQ has made most records from 1965 through 1999 available as mandated by state legislation. Although some historic records (those submitted before the 1965) are also available, it was not a requirement for the well drilling contractor to submit well records.

Well API # 21163001468000 is a salt water disposal well operated by Marathon Pipe Line LLC (original operator Marathon Oil Co). According to the well construction and the plugging and abandonment plan, the well was constructed to be protective of the USDW and to withstand injection pressure from outside pressures. The top of the plug was set at 2,439 and the surface. Available records for this well are included in Appendix B.

No wells appear to have been improperly completed or plugged and abandoned that might act to transmit fluids into the lowermost underground source of drinking water (USDW). Therefore, no corrective action is necessary for this site.

Table C-1 Wells Within the AOR Penetrating the Top of the Confining Zone

	API # 21163004199000 PERMIT #419 W.E. ELLIS	API # 21163001468000 PERMIT #416 MARATHON OIL COMPANY
Date of Construction	April 11, 1927	December 12, 1968
Total Depth (feet)	3,055	3,745
Well Construction	Vertical	Vertical
Cement Records	Unavailable	Unavailable
Plugging Records	Unavailable	Unavailable
Distance from Nearest Proposed Well	Approximately 9,680 feet	Approximately 1,260 eet

D. MAPS AND CROSS SECTIONS OF USDWS

Figure D-1 illustrates a stratigraphic column for Michigan (MDEQ, 2000). Figure D-2 illustrates regional cross sections across Wayne County showing the sedimentary rocks below the glacial overburden discussed further below.

D.1 DOMESTIC WATER USE

The aquifer most commonly used for domestic water is generally found in the glacial drift zone (Figure D-2). In Wayne County, the glacial deposits range in thickness from 20 to 400 feet (Mozola, 1969). In the vicinity of the site, this zone is estimated to be 70 feet thick. The glacial drift zone in the Detroit area occurs under both water table and artesian conditions. It is composed of irregular beds of sand, silt, gravel, and clay (Wisler et al., 1952). Groundwater flow is generally in the east to southeast direction, toward the Michigan River (Gillespie and Dumouchelle, 1988). Based on the February 2005 Wellogic database, approximately 67 percent of the wells in Wayne County produce water from this zone (USGS, 2007).

D.2 LOWERMOST USDW

A USDW is defined as an aquifer or its portion which either supplies any public water system or contains a sufficient quantity of groundwater to supply a public water system. Potential USDWs are aquifers that can yield producible quantities of water that have a total dissolved solids (TDS) concentration less than 10,000 milligrams per liter (mg/L). If an aquifer is not currently supplying drinking water for human consumption, it must contain fewer than 10,000 mg/L TDS and not be an exempted aquifer to be considered a USDW.

The base of the USDW within the AOR, based on logs of wells within the vicinity of the site, is estimated to be at 350 feet bgs at the base of the Sylvania Sand. This is illustrated on Figure D-2 and on cross sections in Attachment F. Underlying the USDW is 3,100 feet of limestone, shale, dolomite, and salt formations protecting the USDW from the proposed injection interval including the 1,410-foot thick confining zone (discussed further in Attachment F).

List of Figures in Attachment D